



California Regional Water Quality Control Board Central Valley Region

Katherine Hart, Chair



Linda S. Adams
Secretary for
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Protection

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Arnold
Schwarzenegger
Governor

10 September 2010

Ms. Shelby Lathrop
ConocoPhillips Company
76 Broadway
Sacramento, California 95818

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2008-0149, CIRCLE K NO. 01914, 1930 LAKE BOULEVARD, DAVIS, YOLO COUNTY (LUSTIS NO. 570295)

The Discharger, ConocoPhillips, and the project operator, Stantec Consulting Corporation, submitted a Notice of Intent on 21 July 2010, requesting coverage under General Order No. R5-2008-0149, General Waste Discharge Requirements for In-Situ Groundwater Remediation at Sites with Volatile Organic Compounds, Nitrogen Compounds, Perchlorate, Pesticides, Semi-Volatile Compounds and/or Petroleum Compounds. Based on information in your submittal, it is our determination that this project meets the required conditions to be approved under Order R5-2008-0149. You are assigned Order No. R5-2008-0149-015.

Project Location:

The project is in the City of Davis in Yolo County, T9N, R2E, S8, Diablo B&M. The assessor parcel number is 036-048-021, this parcel is owned by Circle K Properties Inc.

Project Description:

Petroleum hydrocarbon fuel dispensing at the Circle K No. 01914 have caused a pollution of soil and groundwater by petroleum constituents. The primary constituents are total petroleum hydrocarbons as gasoline (TPHg), methyl tert-butyl ether (MtBE), and tertiary butyl alcohol (TBA). In 1998, petroleum impacts were found during removal and replacement of dispenser pans and installation of underground storage tank (UST) sumps. From 1998 to present a number of soil and groundwater investigations have been completed. A limited remedial measure using dual-phase extraction has been conducted in the past. Although the previous remedial effort was moderately successful, it has been determined that additional remedial efforts are required to more expeditiously and cost-effectively clean up the impacts to soil and groundwater

The Discharger conducted a bench scale test and limited pilot study, which will now be followed by full implementation for remediating the existing petroleum impacts using in-situ chemical oxidation and soil vapor extraction. The Discharger proposes to inject ozone at various locations within the identified boundary seen in the attached Figure 6. The Discharger will also be operating a soil vapor extraction system, and conducting the applicable sampling and reporting. Approval of the full implementation by Central Valley Water Quality Control

California Environmental Protection Agency

Board (Central Valley Water Board) staff follows success of the bench scale and pilot tests. Adequate fail-safe alternates are contained within the Discharger proposals, should adverse water quality conditions, such as the creation of Cr+6, occur.

No comments were received regarding the subject Order during the 30-day public comment period ending on 5 August 2010.

General Information:

1. The project will be operated in accordance with the requirements contained in the General Order No. R5-2008-0149 and in accordance with the information submitted in the Notice of Intent, and otherwise as specified in this Notice of Applicability.
2. The required annual fee (as specified in the annual billing you will receive from the State Water Resources Control Board) shall be submitted until this Notice of Applicability is officially revoked.
3. Injection of materials other than those specified in the Notice of Intent into the subsurface is prohibited, unless analysis, as specified in Order No. R5-2008-0149, the injectant is provided and approval is given by Board staff.
4. Failure to abide by the conditions of the General Order and this Notice of Applicability can result in enforcement actions as authorized by provisions of the California Water Code.
5. The Discharger shall comply with the attached Monitoring and Reporting Program, and any revisions thereto as ordered by the Executive Officer or directed by Central Valley Water Board staff.

If you have any questions regarding this matter, please call David Stavarek at (916) 464-4673 or he can be reached by e-mail at dstavarek@waterboards.ca.gov.

PAMELA C. CREEDON
Executive Officer

Attachments

cc: Mr. Jeff Pinnow, Yolo County Environmental Health Services, Woodland
Mr. Rex Abacan, Construction, Service and Environmental Compliance Manager,
Circle K Properties, Inc., Corona
Mr. Mark Bare, Stantec Consulting Corporation, Rancho Cordova

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2008-0149-015

FOR
IN-SITU GROUNDWATER REMEDIATION AT SITES WITH VOLATILE ORGANIC
COMPOUNDS, NITROGEN COMPOUNDS, PERCHLORATE, PESTICIDES,
SEMI-VOLATILE COMPOUNDS AND/OR PETROLEUM HYDROCARBONS
FOR
CONOCOPHILLIPS/CIRCLE K NO. 01914
1930 LAKE BOULEVARD, DAVIS
YOLO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction and/or treatment system. This MRP is issued pursuant to California Water Code section 13267, and has been prepared based on Attachment C, a part of General Order R5-2008-0149.

No changes to this MRP shall be implemented unless and until a revised MRP is issued by the Executive Officer of the Central Valley Regional Water Quality Control Board (Central Valley Water Board). As appropriate, Central Valley Water Board staff shall approve specific sample station locations and analyses prior to implementation of sampling activities.

PROJECT

1. **Parties Submitting a Notice of Intent under General Order R5-2008-0149:**
ConocoPhillips (hereafter referred to as "Discharger").
2. **Project Location:** The project is in the City of Davis in Yolo County, T9N, R2E, S8, Diablo B&M. The assessor parcel number is 036-480-021.
3. **Project Description:** An unauthorized release from the petroleum hydrocarbon fuel dispensing system at the Circle K No. 01914 has caused a pollution of soil and groundwater by petroleum constituents. The primary constituents are total petroleum hydrocarbons as gasoline (TPHg), methyl tert-butyl ether (MtBE), and tertiary butyl alcohol (TBA). In 1998 petroleum impacts were found during removal and replacement of dispenser pans and installation of underground storage tank (UST) sumps. From 1998 to present a number of soil and groundwater investigations have been completed. A limited remedial measure using dual-phase extraction has been conducted in the past. Although the previous remedial effort was moderately successful, it has been determined that additional remedial efforts are required to more expeditiously and cost-effectively clean up the impacts to soil and groundwater.

The Discharger has proposed to implement remediation of the existing petroleum impacts using in-situ chemical oxidation and soil vapor extraction. The Discharger proposes to use ozone sparging and soil vapor extraction at various locations within the identified boundary seen in the attached Figure 7. The Discharger will also be conducting the applicable sampling and reporting. Central Valley Water Board staff concurred with the Discharger

that the results of pilot tests indicate ozone sparging and soil vapor extraction are appropriate remedial alternatives and the Discharger should proceed with full remedial implementation. Adequate fail-safe alternates are contained within the Dischargers proposal, should adverse water quality conditions, such as the creation of Cr+6, occur.

LEGAL REQUIREMENTS

4. CWC section 13267 states, in relevant part:

(a) A regional board ... in connection with any action relating to any plan or requirement authorized by this division, may investigate the quality of any waters of the state within its region.

(b)(1) In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The Dischargers have submitted a Notice of Intent to the Board indicating that they are responsible for the project subject to Order R5-2008-0149. The reports required herein are necessary to ensure compliance with Order R5-2008-0149.

5. CWC section 13268 states, in relevant part:

(a)(1) Any person failing or refusing to furnish technical or monitoring program reports ... or falsifying any information provided therein, is guilty of a misdemeanor, and may be liable civilly in accordance with subdivision (b).

(b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs.

(c) Any person discharging hazardous waste, as defined in Section 25117 of the Health and Safety Code, who knowingly fails or refuses to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, or who knowingly falsifies any information provided in those technical or monitoring program reports, is guilty of a misdemeanor, may be civilly liable in accordance with subdivision (d).

(d)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (c) in an amount which shall not exceed five thousand dollars (\$5,000) for each day in which the violation occurs.

It is Hereby Ordered that the Dischargers shall comply with the following Monitoring and Reporting Program requirements:

GENERAL REQUIREMENTS

1. All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

GROUNDWATER MONITORING

2. There are 17 monitor wells, 16 ozone sparging wells, 4 vapor extraction wells, and one groundwater extraction well associated with this site. The groundwater monitoring program for these wells and any treatment system wells installed subsequent to the issuance of this MRP, shall follow the schedule below. Monitor wells with free phase petroleum product or visible sheen shall be monitored, at a minimum, for product thickness and depth to water. The volume of extracted groundwater and free phase product, if applicable, shall also be provided in quarterly monitoring reports. Extraction methods to be approved by Central Valley Water Board staff. Sample collection and analysis shall follow standard EPA protocol.

The monitor wells, extraction wells and/or injection wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2, as follows:

Table 1: Sampling Frequency and Constituent Suite¹

Well Number	Frequency	Constituent Suite(s) ²	Monitoring Objective
MW-5, MW-8S, MW-8D, MW-9S, MW-9D	Annual ³	Suites A and B ¹	Compliance ⁴
MW-3, MW-4S, MW-4D, MW-8B, MW-10D	Semi-Annual ⁵	Suites A and B ¹	Treatment Zone ⁶
MW-2, MW-7, and EW-1	Quarterly ⁷	Suites A and B ¹	Treatment Zone ⁵
MW-13S and MW-13D	Quarterly ⁷	Suites A and B ¹	Transition Zone ⁸
MW-1, MW-11, and MW-12	Annual ³	Suites A and B ¹	Background ⁹

¹ CVWater Board staff may change sampling frequency of wells and constituent suite listed in Tables 1 and 2.

² Constituent suite components listed in Table 2.

³ To be sampled during the fourth quarter.

⁴ Wells used to determine compliance with groundwater limitations.

⁵ To be sampled during the second and fourth quarters.

⁶ Wells sampled to evaluate progress of in-situ remediation in the treatment zone.

⁷ To be sampled quarterly.

⁸ Wells sampled to evaluate migration of pollutants within the treatment zone.

⁹ Wells sampled to evaluate background conditions outside the plume limits.

Table 2: Analytical Methods

Constituent	Method ¹	Maximum Practical Quantitation Limit (ug/L) ²
Suite A		
Petroleum Hydrocarbon Compounds (to include TPHg, BTEX, MTBE, TBA)	EPA 8260B	0.5
Suite B		
Iron, Total and Dissolved	EPA 200.7	100
Ferrous and Ferric Iron	EPA 200, 6020 or SM3000	100
Hexavalent Chromium		
Metals, Total and Dissolved ³	EPA 200.7, 200.8	Various

¹ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

³ Metals include aluminum, total chromium, iron, manganese, and zinc.

FIELD SAMPLING

- In addition to the above sampling and analysis, field sampling and analysis shall be conducted each time a monitor well or extraction well is sampled. The sampling and analysis of field parameters shall be as specified in Table 3.

Table 3: Field Sampling Requirements

Parameters	Units	Type of Sample
Groundwater Elevation	Feet, Mean Sea Level	Measurement
Oxidation-Reduction Potential	Millivolts	Grab
Electrical Conductivity	uhmos/cm	Grab
Dissolved Oxygen	mg/L	Grab
pH	pH Units (to 0.1 units)	Grab

Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:

- The operator is trained in proper use and maintenance of the instruments;
- The instruments are calibrated prior to each monitoring event;
- Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
- Field calibration reports are submitted as described in item (b) of the "Reporting" section of this MRP.

DISCHARGE MONITORING

4. The Discharger shall monitor daily the discharge of water and amendments that are injected into the groundwater according to the requirements specified in Table 4. Each amendment addition shall be recorded individually, along with information regarding the time period over which the amendment was injected into the aquifer.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Volume	liters per day	Meter
Amendment(s) Added	kilograms per day	Measured
Biocide Added	kilograms per day	Measured

AMENDMENT ANALYSIS

5. Prior to use, amendments shall be analyzed for the constituents listed in Table 5. The analysis should be done on the pure amendment and on a mixture of the amendment and deionized water at the estimated concentration that would be injected during the pilot project.

Table 5: Amendment Analytical Requirements

Constituent	Method ¹	Maximum Practical Quantitation Limit (ug/L) ²
Volatile Organic Compounds	EPA 8020 or 8260B	0.5
Metals, Total and Dissolved ³	EPA 200.7, 200.8	Various
Total Dissolved Solids	EPA 160.1	10,000
pH	meter	NA
Electrical Conductivity	meter	NA

¹ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported, and reported as an estimated value.

³ Metals include aluminum, total chromium, iron, manganese, and zinc.

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

6. The Discharger shall develop background values for concentrations of dissolved iron, dissolved manganese, arsenic, iron, Cr+6, total dissolved solids and electrical conductivity in groundwater following the procedures found in California Code of Regulations, title 27, section 20415(e)(10). The Discharger shall submit a proposal to develop the background concentrations as determined by Central Valley Water Board staff.

REPORTING

7. When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. In addition, the Discharger shall notify the Central Valley Water Board within 48 hours of any unscheduled shutdown of any soil vapor and/or groundwater extraction system. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Regional Board.
8. As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.
9. The Discharger shall submit quarterly electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The quarterly reports shall be submitted electronically over the internet to the Geotracker database system by the 30th day of the month following the end of each calendar quarter by **30 April, 30 July, 30 October, and 30 January** until such time as the Executive Officer determines that the reports are no longer necessary. Hard copies of quarterly reports shall also be submitted to the Regional Board by the 30th day of the month following the end of each calendar quarter. Each quarterly report shall include the following minimum information:
 - (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume(s) is delineated;
 - (b) field logs that contain, at a minimum, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.;
 - (c) groundwater contour maps for all groundwater zones, if applicable;
 - (d) pollutant concentration maps for all groundwater zones, if applicable;
 - (e) a table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;
 - (f) a table showing historical lateral and vertical (if applicable) flow directions and gradients;
 - (g) cumulative data tables containing the water quality analytical results and depth to groundwater;

- (h) a copy of the laboratory analytical data report, which may be submitted in an electronic format;
 - (i) the status of any ongoing remediation, including an estimate of the cumulative mass of pollutant removed from the subsurface, system operating time, the effectiveness of the remediation system, and any field notes pertaining to the operation and maintenance of the system; and
 - (j) if applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions.
10. A letter transmitting the monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by:

PAMELA C. CREEDON Executive Officer

10 September 2010

(Date)